

Waiver for Performance of Work in the United States (Foreign Work Waiver)

Rationale for performing the work outside the U.S. (“foreign work”);

Wonbae Choi is the Director of Transmission and Interconnection at Algonquin and leads technical analysis and advisory in the areas of transmission planning, renewable integration, market analysis and generation interconnection process and procedures. Wonbae works for Algonquin and is based in the Vancouver, Canada office. He will serve as Algonquin’s technical expert for the duration of the project. He has a unique expertise that is vital to the success of this project – which will in turn benefit the larger US electric grid and improve the economic interest of Americans.

Throughout the concept paper and application development process, he has served as the primary liaison between Algonquin, ERCOT and AEP and has been responsible for calculating the additional value of installation of the SmartValve technology on existing renewable generation throughout ERCOT.

A description of the work proposed to be performed outside the U.S.;

Wonbae Choi has and will need to continue performing power system stability analysis using PSS/E software to determine the impact of the SmartValve application on ERCOT and AEP systems.

An explanation as to how the foreign work is essential to the project;

It is critical to continue to validate the optimal location and number of SmartValve products for this project. To this end, Wonbae Choi's ability to analyze power system stability is essential.

A description of the anticipated benefits to be realized by the proposed foreign work and the anticipated contributions to the US economy;

The vast majority of work on the Project will be taking place in the US, with installations occurring in Illinois and Texas. The benefits realized as part of the entire project include increased renewables in Illinois integrated into the electric grid without triggering the need to build new transmission lines in the face of stability issues. In the Lower Rio Grande Valley of Texas, the proposed SmartValve installation will allow the existing transmission system to make better use of the existing infrastructure, unlocking increased transmission capacity while maintaining stability in the region, reducing clean energy curtailments, supporting additional clean energy generation development in the area, and increasing the system’s ability to respond to adverse contingency events.

These benefits include: (1) reducing emissions on the Illinois grid by approximately 106,000 tons of CO₂ per year (the equivalent of removing 21,000 cars from the roads); (2) providing revenue to local farmers once the facility interconnects with the grid; (3) contributing over \$1.1 million per year in property tax revenue; and (4) funding the already developed community benefits agreement with the village of Paw Paw, Illinois.

It is estimated that initial Texas implementation can increase the transfer capacity through the LRGV Export GTC by 186MW, and by offsetting fossil fuel generation, 260,000 tons of CO2 equivalent would be avoided annually. A total of 473 GWh of additional renewable generation would reach the market from the initial deployment, which represents a 32% decrease in renewable curtailments in south Texas. The value to ratepayers of the initial deployment on the Valley Export GTC is estimated at \$173M per year (resulting from decreases in production costs on the system). The initial Texas implementation would also help to relieve the LRGV Valley Import constraint further benefitting ratepayers.

The associated benefits to be realized and the contribution to the project from the foreign work;

- Improved ties between community/municipal workforce development and environmental organizations and the broader electric industry, including both renewable generation development firms and electric utilities.
- Enhanced long-term opportunity for workers with experience or demonstrated interest in growing their technical skillsets.
- Redesigned electrical engineering undergraduate curricula to include Smart Grid topics, and student scholarships and summer internships through the Smart Grid Leaders Initiative at two higher education institutions.
- Establishment of community-based emissions and electricity bill analysis capabilities; improved engagement with state public utility commission rate cases on utility electricity rates.

How the foreign work will benefit the U.S., including manufacturing, contributions to employment in the U.S. and growth in new markets and jobs in the U.S.; How the foreign work will promote domestic American manufacturing of products and/or services;

Wonbae Choi has a unique skillset that will enable the success of this project. The project supports the overall improvement of the electric grid in the United States. Not only does an improved grid enable Americans' ability to access clean and reliable energy, but it also supports the U.S. workforce and growth to meet the huge demand for an improved electric grid. If awarded, this project will use American workers to carry out the installation of the SmartValves, with a preference for unionized labor. It will also provide training sessions labor who will be installing the SmartValves. The company Smart Wires is based in St. Petersburg, FL. This project will increase the demand for SmartValve units, eliciting capital infusion and associated workforce expansion at the Smart Valve assembly facility in St. Petersburg.

Further, comprehensive workforce agreements will be negotiated with utility and local labor organizations. The construction, operation, and maintenance and/or future expansion of the SmartValve installations will lead to new green and permanent U.S. career jobs, as an outgrowth of new training programs in advanced power generation, transmission, and distribution of complex networks.

A description of the likelihood of Intellectual Property (IP) being created from the foreign work and the treatment of any such IP;

Intellectual Property is not expected to be created from this work.

The total estimated cost (DOE and recipient cost share) of the proposed foreign work;

The Total Cost of the proposed foreign work would be \$70,000.00.

The countries in which the foreign work is proposed to be performed; and

Canada

The name of the entity that would perform the foreign work.

Algonquin, Wonbae Choi. Wonbae's resume is included as part of the full application package.